CHAPTER 8
PIPING

8-1. Materials.

a. Steel compressed air piping will be Schedule 80 for sizes 2 inches and smaller and Schedule 40 for sizes over 2 inches and will be galvanized or black steel or stainless steel. Copper compressed air piping or tubing will be Type K or Type L. Fiberglass reinforced plastic (FRP), as specified in Mil. Spec. MIL-P-28584, may also be used within the following limitations:

(1) 150 psig maximum pressure, up to 200 degrees F.

(2) 75 psig maximum pressure, up to 250 degrees F.

Pipe fittings will be galvanized or black steel or stainless steel, to match piping used. When copper pipe or tubing is used, brazed joints will he used for connections. Brazing filler metals with melting temperatures between 1 ,000 degrees F and 1 ,600 degrees F will be used. Soldered joints should not be used.

b. Thermoplastic piping systems for transport or storage of compressed air will not be allowed. Safety records show that leaks in these types of pipe (when used for compressed air service) have caused the pipe to rupture, causing serious injury to personnel and/or property damage.

8-2. Loss of air pressure due to friction.

The loss of pressure in piping is caused by resistance in pipe, fittings, and valves, which dissipates energy by producing turbulence. The piping system will be designed for a maximum allowable pressure drop of 5 percent from the compressor to the most distant point of use. The Darcy formula and nomograph shown in the Crane Co. Technical Paper No. 410 may be used to determine pressure drop through pipe, valves, and fittings.

8-3. Piping layout.

Where possible the piping system should be arranged as a closed loop or “ring main” to allow for more uniform air distribution to consumption points and to equalize pressure in the piping. Separate services requiring heavy air consumption and at long distances from the compressor unit should be supplied by separate main airlines. Pipis to be installed parallel with the lines of the building, with main and branch headers sloping down toward a dead end. Traps will be installed in airlines at all low points and dead ends to remove condensed moisture. Automatic moisture traps used for this purpose are effective only when the air has been cooled and the moisture has precipitated. Branch headers from compressed air mains will be taken off at the top to avoid picking up moisture. When an isolation valve, or other flow restricting device, is placed in the discharge line between the compressor and after cooler or receiver, a safety valve or valves will be placed in the pipeline between them. The safety valve or valves will have a total capacity sufficient to handle the entire output of the compressor. (If no safety valve is used, and the isolation valve is closed upon starting, or anytime during compressor operation, sufficient pressure may be built up which could cause injury or damage.) A strainer or filter and a lubricator must be provided in piping that serves tools. Flexible connectors, such as flexible metal hose, will be used to connect the discharge piping system to the air compressors. Where air quality downstream of the compressor. receiver, and dryer is not assured for the end use, the required additional filtration will be provided at the point of use.